



DEPARTMENT OF
ECOLOGY
State of Washington

AMENDMENT NO. 1

TO

IAA NO. C1800154

BETWEEN THE

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

AND

U.S. FISH AND WILDLIFE SERVICE

PROJECT TITLE: Longevity of Bioretention Depths for Preventing Acute Toxicity from Urban Stormwater Runoff

PURPOSE: To amend the Agreement between the state of Washington, Department of Ecology, hereinafter referred to as “ECOLOGY,” and the U.S. Fish and Wildlife Service, hereinafter referred to as “USFWS.”

WHEREAS, zebrafish morphological toxicity testing for the influent stormwater from Events ending WYs 2 and 3 did not produce detectable toxicity, therefore precluding assessment of treatment performance of various bioretention depths. The project teams from ECOLOGY and USFWS have agreed that remaining zebrafish morphological assays are no longer needed and should be discontinued. This assay will be replaced with a molecular assay using zebrafish (qRT-PCR analysis of metallothionein (*mt2*) and cytochrome P450 (*cyp1a*)), which will be conducted for Event 1 and the Events ending each of the 10 WYs. The project will also include additional acute toxicity tests using coho salmon (with amended future testing dates), modified to compensate for the greater number of coho needed across the study. For these tests, the number of replicates will be reduced from three to two, and the number of fish per replicate increased from 8 to 10. Toxicity testing using coho salmon will be conducted for Event 1 and the Events ending WYs 4, 6, 8, and 10, rather than only Event 1 and the Events ending WYs 5 and 10.

IT IS MUTUALLY AGREED the Agreement is amended as follows:

1) The Period of Performance is amended to read as follows:

The expiration date is moved from September 30, 2020 to March 31, 2022.

2) The tasks in the Scope of Work are amended to read as follows:

The following deliverables are amended from the Scope of Work:

Task 4.0: Project Management

- D 4.3 (Progress Report 3) is amended to include the results of acute toxicity testing using coho salmon and qRT-PCR analysis using zebrafish embryos for the Event ending WY 4. The zebrafish morphological assay originally intended for the Event ending WY 4 has been omitted.
- D 4.4 (Progress Report 4) is amended to include the results of acute toxicity testing using coho salmon for the Event ending WY 6 and qRT-PCR analysis using zebrafish embryos for the Events ending WYs 5 and 6. The zebrafish morphological assays originally intended for the Events ending WYs 5 and 6 have been omitted. The acute toxicity test using coho salmon originally intended for the Event ending WY 5 has been omitted.
- D 4.5 (Progress Report 5) is amended to include the results of acute toxicity testing using coho salmon for the Event ending WY 8 and qRT-PCR analysis using zebrafish embryos for the Events ending WYs 7 and 8. The zebrafish morphological assays originally intended for the Events ending WYs 7 and 8 have been omitted.

Task 5.0. Outreach and Communication

- D 5.4 (Final Report) is amended to include analysis of qRT-PCR testing using zebrafish embryos for the Events ending WYs 9 and 10. The zebrafish morphological assays originally intended for the Events ending WYs 9 and 10 have been omitted. The result of qRT-PCR testing using zebrafish embryos for the Events ending WYs 1-3 will also be included here.

3) The Budget is amended to read as follows:

The total compensation is increased by \$15, 000, from \$396,076 to \$411,076. The budget is revised, see attached Project Budget and Schedule table.

All other terms and conditions of the original Agreement including any other amendments remain in full force and effect, except as expressly provided by this Amendment.

This Amendment is signed by persons who represent that they have the authority to execute this Amendment and bind their respective organizations to this Amendment.

This Amendment is effective on the signature date of Ecology.

IN WITNESS WHEREOF, the parties below, having read this Amendment in its entirety, including any attachments, do agree in each and every particular as indicated by their below signatures.

**State of Washington
Department of Ecology**

U.S. Fish and Wildlife Service

By:

Signature

Date

By:

Signature

Date

Heather R. Bartlett

Rollie White

Deputy Director

Assistant Regional Director – Ecological Services

Approved as to form only.
Assistant Attorney General

Project Budget and Schedule – Amendment No. 1

Deliverables needing ECOLOGY approval will be submitted as completed. All deliverable costs are included within the cost of each task. Target deliverable costs are estimates and do not represent a maximum allowable limit. Amounts billed above these estimates will not result in an increase in total project cost.

Table 1: Amended Target Deliverable Due Dates and Costs.

Deliverable by Task	Target Deliverable Date	Target Deliverable Cost
Task 1.0 QAPP development		
D1.1 Draft QAPP	August 2018	\$ 14,000
D1.2 Final approved QAPP	September 2018	\$ 15,505
Task 2.0 Prepare experimental columns		
D2 Report on chemistry and toxicology of bioretention soil media components	May 2019	\$ 30,531
Task 3.0 Condition experimental columns		
D3 Report on chemistry of clean water effluent and WSU-Puyallup lab water	June 2019	\$ 33,071
Task 4.0 Bioretention performance throughout accelerated aging		
D4.1 Progress Report 1	March 2020	\$ 52,476
D4.2 Progress Report 2	September 2020	\$ 52,476
D4.3 Progress Report 3	December 2020	-\$ 52,476 \$57,476
D4.4 Progress Report 4	March 2021	-\$ 52,476 \$57,476
D4.5 Progress Report 5	September 2021	-\$ 52,476 \$57,476
Task 5.0 Outreach & communication		
D5.1 Draft fact sheet explaining results for stormwater managers, NPDES permit coordinators, and others involved in stormwater management.	December 2021	\$ 5,584
D5.2 Two presentation to share findings with stormwater managers, including a presentation to the Stormwater Workgroup and one regional stormwater conference/workshop.	December 2021	\$ 5,584
D5.3 Draft final report using SAM template	February 2022	\$ 19,419
D5.4 Final report	March 2022	\$ 10,000
Total		\$396,076 \$411,076